CLAIMS

What is claimed is:

1. A method for automatically processing a representation of a multimedia presentation having multiple

5   information streams contained therein, the method comprising the steps of:

   (a) matching observed event cues detected within at least one information stream of the multimedia presentation with a model of expected event cues

10   for a class of presentations to which the specific multimedia presentation belongs; and

   (b) selecting presentation segments of the multimedia presentation based upon the results of matching observed event cues with the model of expected

15   event cues.

2.   A method as in Claim 1 wherein the step of selecting presentation segments is implemented using a finite state machine having the expected event cues as state transitions.

20 3.   A method as in Claim 1 wherein the expected event cues comprise a plurality of time difference based cues.

4.   A method as in Claim 1 wherein the expected event cues comprise a plurality of intrastream cues taken from a given information stream.

5.   A method as in Claim 1 wherein the expected event cues
5   comprise interstream cues taken from more than one information stream, and the step of selecting presentation segments comprises correlating the interstream event cues.

6.   A method as in Claim 1 wherein the expected event cues
10   are taken from a text information stream.

7.   A method as in Claim 6 wherein the expected event cues are closed captioned word cues.

8.   A method as in Claim 6 wherein the expected event cues are closed captioned punctuation cues.

15 9.   A method as in Claim 6 wherein the expected event cues are token phrases for the class of multimedia presentation.

10. A method as in Claim 9 wherein the token phrases comprise text strings.

11. A method as in Claim 9 wherein the token phrases comprise closed captioned punctuation cues.

12. A method as in Claim 11 wherein the close captioned punctuation cues are selected from the group consisting of ">>", ">>>", and ":".

13. A method as in Claim 9 wherein the token phrases comprise a named entity and a text string.

14. A method as in Claim 13 wherein the token phrases include "I'm" followed by a <person> named entity.

15. A method as in Claim 9 wherein the token phrases comprise a named entity and a closed captioned punctuation cue.

16. A method as in Claim 15 wherein the token phrases include a <person> named entity followed by a ":".

17. A method as in Claim 9 wherein the token phrases comprise introductory news broadcast terms.

18. A method as in Claim 17 wherein at least one token phrase is selected from the group consisting of "I'm", "hello", "welcome", "hello from", "welcome to",

"thanks for watching", "thanks for joining us", and "here on".

19. A method as in Claim 9 wherein the token phrases comprise anchor to reporter hand-off phrases.

5   20. A method as in Claim 19 wherein at least one token phrase comprises a reporter named entity.

21. A method as in Claim 19 wherein at least one token phrase is selected from the group consisting of a station identification with a reporter named entity, a reporter named entity with the phrase "joins us", and a reporter named entity with the phrase "reports".

22. A method as in Claim 9 wherein the token phrases comprise reporter to anchor hand-off phrases.

23. A method as in Claim 22 wherein at least one token phrase is selected from the group consisting of a station identification with a reporter named entity, a reporter named entity with a located named entity, "back to you", and "thank you".

24. A method as in Claim 9 wherein the token phrases comprise leaders to highlights of upcoming news stories.

25. A method as in Claim 24 wherein at least one token phrase is selected from the group consisting of "coming up", "next on", "ahead on", "when" together with a station identification and "returns", and "also
5 ahead".

26. A method as in Claim 9 wherein the token phrases comprise sign off phrases.

27. A method as in Claim 26 wherein at least one token phrase is selected from the group consisting of "that
10 wraps up", "that is all", "that's all", "that's" together with a news program identification, "thanks for watching", and "thanks for joining us".

28. A method as in Claim 6 wherein the expected event cues are named entities.

15 29. A method as in Clam 28 wherein the named entities are selected from the group consisting of persons, locations, organizations, times, dates and monetary values.

30. A method as in Claim 1 wherein the model of expected
20 event cues is developed from observed event cues occurring in a class of media presentations.

31. A method as in Claim 28 wherein the model of expected event cues is developed by statistical analysis of observed event cues.

32. A method as in Claim 1 wherein the expected event cues
5   are taken from an image information stream.

33. A method as in Claim 32 wherein the expected event cues are selected from the group consisting of black frame, logo frame, single anchor frame, double anchor frame, and reporter frame.

10 34. A method as in Claim 1 wherein the expected event cues are taken from an audio information stream.

35. A method as in Claim 34 wherein the expected event cues are selected from the group consisting of silence detection, speaker change detection, and jingle
15   detection.

36. A method as in Claim 1 wherein the expected event cues are indications of news stories.

37. A method as in Claim 34 wherein the expected event cues are selected from the group consisting of before
20   start of broadcast, start of broadcast, highlight

segment, advertising, story start, story end, before end of broadcast, and end of broadcast.

38. A method for automatically processing a representation of a multimedia presentation having multiple

5   information streams contained therein, the method comprising the steps of:

    (a)   selecting at least one contiguous portion of the multimedia presentation as a story segment;

    (b)   extracting text information from a text

10   information stream corresponding to the story segment as text data;

    (c)   extracting story summary data from the text data;

    (d)   extracting named entities from the text data; and

    (e)   linking together a stored representation of the

15   text data, summary data, and named entity data for the story segment.

39. A method as in Claim 38 wherein the method additionally comprising the steps of:

    (f)   storing the representations of the text data,

20   summary data, and named entity data for story segments as one or more files on a file server computer connected to a computer network; and

    (g)   allowing access to the stored representations of news story segments available to a browser

program running on at least one client computer connected to the computer network.

40. A method for automatically processing a representation of a multimedia presentation having multiple

5   information streams contained therein, the method comprising the steps of:

(a) selecting at least one contiguous portion of the multimedia presentation as a story segment;

(b) extracting text information from a text

10   information stream corresponding to the story segment as text data;

(c) extracting named entities from the text data; and

(d) extracting story summary data using the named entities as a basis.

15 41. A method as in Claim 40 wherein the step of extracting story summary data additionally comprises the step of:

(a) determining a frequency of occurrence for the named entities per sentence in a story segment; and

20   (b) selecting a sentence with a greatest named entity frequency of occurrence as a topic sentence.

42. A method as in Claim 41 wherein step (b) of selecting a sentence additionally comprises the step of:

(i)   if more than one sentence has a greatest named entity frequency of occurrence, selecting the sentence closest to the beginning of the story as the topic

5   sentence.

43. A method for automatically processing a representation of a multimedia presentation having multiple information streams contained therein, the method comprising the steps of:

10   (a)   selecting at least one contiguous portion of the multimedia presentation as a story segment, by matching a model of expected event cues with observed event cues in at least one information stream; and

15   (b)   presenting a summary display of the story segment including one or more named entities extracted from a text stream together with a key frame extracted from an imagery stream.

44. A method for automatically processing a representation
20   of a multimedia presentation having multiple information streams contained therein, the method comprising the steps of:

(a)   selecting at least one contiguous portion of the multimedia presentation as a story segment; and

(b) selecting a key frame from an imagery stream representative of the segment based upon the type of segment.

45. A method as in Claim 44 wherein the story segment

5 contains a reporter segment and the key frame is selected from the middle of the reporter segment.

46. A method as in Claim 44 wherein the story segment contains an anchor booth segment and the key frame is selected from the middle of the anchor booth segment.

10 47. A method for presenting a summary representation of a multimedia presentation having multiple information streams contained therein, the method comprising the steps of:

(a) automatically extracting contiguous portions of

15 the multimedia presentation as story segments; and

(b) presenting a summary display of having multiple summary presentation elements representative of the extracted story segments.

20 48. A method as in Claim 47 wherein the summary presentation elements from a given story segment are displayed together.

49. A method as in Claim 48 wherein the summary presentation elements comprise named entities.

50. A method as in Claim 48 wherein the summary presentation elements comprise summary sentences.

5   51. A method as in Claim 48 wherein the summary presentation elements comprise a hyperlink to a source media element of the segment.

52. A method as in Claim 48 wherein step (b) of presenting a summary display additionally comprises the step of:

10   presenting extracted named entities in a hypertext link form such that hyperlinks lead to presentation of additional elements of the story segment.

53. A method as in Claim 43 wherein step (b) of presenting

15   a summary display additionally comprises the step of:

        in response to a search query for a selected named entity, presenting a thumbnail view comprising key frames from multiple story segments containing the selected named entity.

20 54. A method as in Claim 43 wherein step (b) of presenting a summary display additionally comprises the step of:

in response to a search query for a story

segments of a selected type, presenting a thumbnail

view comprising key frames from multiple story

segments of the selected type.

5 55. A method for automatically processing a representation

of a multimedia presentation having multiple

information streams contained therein, the method

comprising the steps of:

(a) selecting at least one contiguous portion of the

10 multimedia presentation as a story segment;

(b) extracting information from at least one

information stream corresponding to the story

segment as source data;

(c) extracting a summary representation of the story

15 segment from the source data; and

(d) presenting a plurality of related story segments

using a layered hierarchical presentation of the

summary representations at a relatively high

hierarchical level and the source data at a

20 relatively low hierarchical level, together with

hyperlinks permitting navigation among related

story segments to a desired hierarchical level of

representation.

56. A method as in Claim 55 wherein the information stream

25 is a text stream, the source data is text relating to

a story segment, and the summary representation
includes named entities.

57. A method as in Claim 55 wherein the information stream
is an image stream, the source data is image data for

5   the complete story segment, and the summary
representation is a key frame.

58. A method for automatically processing a representation
of a multimedia presentation having multiple
information streams contained therein, the method

10   comprising the steps of:

(a) selecting at least one contiguous portion of the
multimedia presentation as a story segment;

(b) extracting named entities from a text information
stream corresponding to the story segment; and

15   (c) used extracted named entities as search criteria
to select from among a plurality of story
segments.

59. A method as in Claim 58 additionally comprising the

20   step of:

(d) in response to a search query, presenting a list
of named entities and their corresponding number
of occurrences in story segments over a selected
time period.

60. A method as in Claim 58 additionally comprising the
step of:

    (d)   in response to a search query, presenting a graph

           of named entities and their corresponding

5   frequency of occurrences in story segments over a

           selected time period.

61. A method as in Claim 60 additionally comprising the
step of:

    (e)   in response to selection of a point on the graph

10   of named entities, presenting the user with an

           overview story segments containing the selected

           named entity.

62. A method as in Claim 58 additionally comprising the
step of:

15   (d)   in response to a search query for a story

           segments of a selected type, presenting a

           thumbnail view comprising key frames from

           multiple story segments of the selected type.